REMARKS

I. Rejections Under 35 U.S.C. § 112

Claims 1-3 and 5 have been rejected under 35 U.S.C. § 112, for lack of written description and lack of enablement with respect to the claim limitations regarding preheating, copper, two minutes, and the mandrel test. Applicant has cancelled claims 1-3 and 5, and has no reference to preheating, copper, time or testing in new independent claim 6. Therefore, the § 112 rejections are moot.

II. Rejections Under 35 U.S.C. § 103

Claims 1, 2 and 5 have been rejected under 35 U.S.C. §103(a) as being obvious over the combination of Rallis and Japan '213. Claims 1-3 and 5 have been rejected under 35 U.S.C. §103(a) as being obvious over the combination of Gierek, Rallis and Japan '213. Applicant respectfully traverses these rejections, and requests reconsideration of the new claim 6.

Claim 6 requires, among other things, the following steps:

1. preparing the product surface by jet abrasion, and then
2. plunging the prepared product into an aluminum melt having a temperature of 660 – 680°C and alloyed with zinc, silicon, magnesium and tin at designated percentages so as to coat the product with the alloy without the use of flux; and
3. the resulting coated product being capable of winding on a 10 mm mandrel without breaking the alloy coat.

These limitations are not met by the cited references.

The Examiner acknowledges that Rallis does not meet the alloy composition limitations of claim 6. The Examiner relies upon the Japan '213 patent for this composition of the alloy melt, and concludes that it would be obvious to use the Japan '213 alloy in place of the Rallis alloy with an expectation of providing a desirable corrosion resistant plated article. However, there is no evidence that the Japan '213 alloy provides better corrosion protection than the alloy of Rallis. Rallis specifically states in the last sentence of the Abstract that its coated product has "enhanced corrosion resistance." There is no evidence that using the Japan '213 alloy provides a better corrosion protection than the Rallis alloy.

As the Supreme Court acknowledged in KSR, there must be a reason to combine known elements in the fashion claimed in a patent. KSR Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727, 1741 (2007). Merely demonstrating that each element of a combination is known in the prior art does not constitute obviousness. Id. Furthermore, as the Court of Appeals for the Federal Circuit has long recognized, the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992). As further explained by an earlier decision of the Federal Circuit,

> It is wrong to use the patent-in-suit as a guide through the maize of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit." Orthopedic Equipment Co. v. U.S., 217 U.S.P.Q. 193, 199 (Fed. Cir. 1983).

The Supreme Court also discussed obviousness of combined prior art references when the combination produces improvements. KSR, 127 S.Ct. at 1740. Absent an improvement, there is no reason to modify one reference in view of another.

Any combination of Rallis and the Japan '213 patent lacks any rational underpinning, as required by KSR, and appears to rely on the improper use of hindsight based upon Applicant's Specification, as precluded by KSR. 127 S.Ct. at 1742.

Also, Rallis heats the coated product to inter-diffuse the aluminum and steel. It is unknown whether such inter-diffusion will or can occur if the aluminum alloy is changed from Rallis to Japan '213. Of course, it is improper to modify a reference in a manner inconsistent with its teaching. In re Gorden, 733 F.2d 900, 902 (Fed. Cir. 1984). Thus, it is not obvious that Rallis can be modified and still maintain the inter-diffusion of the aluminum coating and the steel product.

Furthermore, there is no evidence that the Rallis product, even if modified by Japan '213, meets the last limitation of claim 6 that the coated product can be wound on 10 mm mandrel without breaking the alloy coating. While the Examiner suggests that such a result is inherent due to the Japan '213 composition, such winding without breaking of the alloy coating is not necessarily inherent, particularly since Rallis does not have the precise temperature of claim 6, as admitted by the Examiner on page 11 of the Office Action. In addition to the ASTM standard submitted in Applicants' previous amendment (which shows that a mandrel test is well known in

the art), Applicants attach an English translation of a Russian interstate standard for testing wire by wrapping on a mandrel. Thus, this step of claim 6 is well known by those skilled in the art, but does not lead to a conclusion of inherency. The fact that the modified Rallis product may be wound on a 10mm mandrel without cracking is not sufficient to show inherency. See MPEP 2112(IV) and In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993) cited therein. It is not clear that winding on a 10mm mandrel without cracking necessarily flows from the Japan '213 alloy. Mere probabilities and possibilities does not establish inherency. MPEP 2112.

Lastly, claim 6 has been narrowed, as compared to the previously pending claims, by describing the process as "consisting of" rather than "comprising". Thus, there are no additional steps to the coating process. In comparison, Rallis dips or sprays the product with the aluminum alloy and then heats the coated product to interdiffuse aluminum metal and the iron in the steel matrix. Thus, Rallis, even if modified by Japan '213, does not meet the "consisting of" limitation of claim 6.

Thus, for all of the above reasons, the § 103 rejection based upon the combination of Rallis and Japan '213 is defective and must be withdrawn.

The § 103 rejection based upon the combination of Gierek, Rallis and Japan '213 also must be withdrawn for the reasons stated above. More particularly, the mere substitution of the Japan '213 alloy for the Gierek alloy has no rational underpinning, as required by KSR, since there is no evidence that the Japanese alloy has better corrosion resistance than the Gierek alloy. The mere substitution of one alloy for another alloy, with no apparent advantages or improvements, does not constitute obviousness. Without any rational underpinning for combining Gierek and Japan '213, the modification is improperly based upon hindsight derived from the present application.

Also, the simultaneous heat treating of Gierek contradicts the "consisting of" restriction of claim 6, which necessarily precludes such additional steps in the coating process.

Therefore, claim 6 distinguishes over the cited references and the § 103 rejection based upon Gierek, Rallis and Japan '213 must be withdrawn.

In view of the foregoing, Applicant respectfully requests that a Notice of Allowance be issued.

No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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- pw/bjh -
Attachment: Interstate Standard Translation

GOST [State Standard] 10447-93

INTERSTATE STANDARD

WIRE
METHOD OF TESTING FOR WRAPPING

Official Publication

[illegible stamp]

INTERSTATE COUNCIL FOR STANDARDIZATION, METROLOGY AND CERTIFICATION
Minsk

Foreword

1. DEVELOPED by the interstate technical committee 146 "Metizy [Metalware]," by the All-Russian Scientific-Research Institute of the Metalware Industry (VNIIMETIZ)

INTRODUCED BY Gosstandart Russia

2. ACCEPTED by the Interstate Council for Standardization, Metrology and Certification (Protocol No. 4-93, October 19, 1993).

Voting for acceptance:

State	Name of National Agency for Standardization
Republic of Armenia	Armgosstandart
Republic of Belarus	Belstandart
Republic of Kazakhstan	Gosstandart, Republic of Kazakhstan
Republic of Moldova	Moldovastandart
Russian Federation	Gosstandart Russia
Turkmenistan	Turkmengosstandart
Republic of Uzbekistan	Uzgosstandart
Ukraine	Gosstandart Ukraine

3. This standard was developed by direct use of the International Standard ISO 7802-83 "Materials, Metal. Method of testing for wrapping" with additional requirements reflecting the demands of the economy of the country.

By resolution of the Committee of the Russian Federation on Standardization, Metrology and Certification of June 2, 1994, No. 160, the Interstate Standard GOST 10447-93 was put into effect directly as the State Standard of the Russian Federation as of January 1, 1995.

4. FIRST INTRODUCED

UDC 669-426:620.163.33:006.354 Group B79

INTERSTATE STANDARD

WIRE
Method of Testing for Wrapping
Wire. Wrapping. Test method

GOST
10447-93

OKSTU 1209

Date of effect January 1, 1995

1. Purpose and area of use

This standard establishes a method for determining the ability of *varying cross-sectional shape* with diameter or thickness from 0.1-10 mm inclusive to undergo plastic deformation in the wrapping process.

Additional requirements that reflect the needs of the economy of the country are indicated in italics.

2. Nature of method

2.1. The nature of the method lies in wrapping several turns of a wire in the form of a tightly wound spiral around a mandrel of diameter established in the *normative-technical documentation* for the wire. If necessary, the test includes a specific sequence of wrapping, unwrapping, rewrapping.

2.2. *If, in the normative-technical documentation for the wire, the diameter of the mandrel is not specified, then wrapping should be done:*

for wire less than 4.0 mm in diameter — on a mandrel with diameter equal to the diameter of the tested specimen;

for wire from 4.0 mm to 6.0 mm in diameter — on a mandrel with diameter equal to twice the diameter of the tested specimen;

for wire greater than 6.0 mm in diameter — on a mandrel with diameter equal to three times the diameter of the tested specimen.

3. Test equipment

The equipment must assure wrapping of wire about the mandrel with turns lying tightly against each other. As the mandrel, one may use a segment of the tested wire under the condition that its diameter corresponds to the required mandrel diameter and it has sufficient rigidity.

4. Conduct of tests

4.1. The tests must be conducted at an ambient temperature from 10-35°C.

Official [Arbitration] tests are conducted at a temperature of (23 ± 5)°C.

4.2. *The method for choosing samples for testing is established by the normative-technical documentation for the wire.*

4.3. *The length of the sample is established as a function of the diameter of the mandrel and the number of turns.*

4.4. *Prior to testing, straightening of the samples with the aid of straightening machines, a hammer, or by hand is permitted, where the surface of the samples must not be damaged and the cross section must not be altered.*

4.5. The wire must be wrapped without distortion in a dense spiral about the mandrel, which is rotating at a constant maximum rate of 1 sec^{-1}, so that adjacent turns touch each other. The wrapping rate can, if necessary, be altered so that heat produced in the test does not affect the test results.

The number of turns of the sample in conducting the test is specified in the normative-technical documentation for the wire, and if such specification is lacking, the number of turns must be at least 5.

4.6. For tighter wrapping, it is permissible to apply a tensile stress to the sample of wire, the magnitude of which must not exceed 5% of the nominal value of the ultimate strength.

4.7. When unwrapping, or unwrapping with subsequent wrapping, is required, the rate of the test must be sufficiently low, but no more than 1 sec^{-1}, so that an increase of temperature does not affect the test results. At the end of unwrapping tests, at least one turn must remain on the mandrel.

4.8. The requirements on evaluating the results of the test for wrapping are indicated in the corresponding standards and *other normative-technical documentation* for the wire. If such requirements are not given, then the absence of surface cracks that are visible without magnification is considered to be sufficient grounds to consider the sample to have passed the

test. A wire with thickness or diameter of less than 0.5 mm must be monitored using magnification up to 10x, *if this is stipulated in the normative-technical documentation for the wire.*

5. Test protocol

The test protocol must contain:

a) number of the current standard;

b) conditional designation of wire (type of steel, type of coating, etc.);

c) diameter or thickness of tested sample;

d) diameter of mandrel;

e) test conditions (number of turns or length of wrapped section);

f) test results.

Instead of subpoints a, b and f it is permissible to indicate "correspondence to scientific-technical documentation" in the test protocols for specific types of wire.